

FREQUENCY DISCRIMINATOR USING REPLICA COMPENSATED
DELAY LINES AND METHOD OF OPERATION

ABSTRACT OF THE DISCLOSURE

5 A frequency discriminator for detecting phase shifts between
sequential pulses in a frequency-shift keyed (FSK) signal having
a nominal frequency, f . The frequency discriminator comprises:
10 1) a first current controlled delay line for receiving the FSK
signal and delaying the FSK signal by a desired time delay to
thereby produce a time-delayed FSK signal; 2) a multiplier for
receiving and multiplying the FSK signal and the time-delayed FSK
signal to thereby produce an output product signal proportional
to a phase shift between said FSK signal and said time-delayed
FSK signal; and 3) a delay locked loop comprising a second
15 current controlled delay line substantially similar to the first
current controlled delay line. The delay locked loop receives a
reference clock signal having a time period equal to the desired
time delay and adjusts a control current level in the second
current controlled delay line until a delay of the second current
20 controlled delay line matches the time period of the reference
clock signal. The control current level is then used to adjust a
delay of the first current controlled delay line.